205. The process of claim 204, wherein after the foreign DNA has been introduced, the embryogenic monocotyledonous callus cells, suspension cells or microspore-derived embryos are transferred to a media for steps (a) and (b) which includes a selective agent to identify a transformed plant cell that has incorporated the foreign DNA.

206. The process of claim 205, wherein transformed plant cells are cultured in media to support regeneration of transformants.

207. The process of claim 206, which further comprises confirming expression of the foreign DNA in the transformed plants by one or both of polymerase chain reaction and Southern blot analyses. --

REMARKS

The abstract as originally filed is replaced by the new abstract which does not exceed 150 words to comply with 37 CFR 1.72(b).

The claims as originally filed have been cancelled and new claims 107 - 207 substituted therefor in order to eliminate multiple dependent claims. All of the claim amendments are supported by the original specification, and no new matter has been added.

Respectfully submitted,

Susan K. Doughty

Susan K. Doughty
Reg. No. 43,595

GREENLEE, WINNER AND SULLIVAN, P.C.
5370 Manhattan Circle, Suite 201
Boulder, CO 80303
Telephone: (303) 499-8080
Facsimile: (303) 499-8089
E-mail: winner@greenwin.com

Attorney docket No. 68-00A
Ila: November 12, 2001

US Serial No. 09/929,831
Marked-up version showing changes made

ABSTRACT

A process for inducing direct somatic embryogenesis and secondary embryogenesis in monocotyledonous plant cells and rapidly regenerating fertile monocotyledonous plants is provided. [In a first step, e]Embryogenic monocotyledonous plant cells are cultured under conditions conducive to direct formation of primary embryos without an intervening callus stage, at least until [at least] one primary embryo reaches the globular developmental stage and no longer than the coleoptilar stage. [In a second step, one or more] The primary embryos [from the first step] are cultured under conditions conducive to induction of secondary [embryo formation, until secondary embryogenesis is detected. In a third step, one or more secondary embryos from the second step]embryos, which are cultured under conditions conducive to [regeneration of] regenerate plantlets [from the secondary embryos]. Also provided [is] are processes for inducing direct somatic embryogenesis in monocotyledonous plant cells and rapidly regenerating fertile monocotyledonous plants, without secondary embryogenesis; [In a first step, embryogenic monocotyledonous plant cells are cultured under conditions conducive to direct formation of primary embryos without an intervening callus stage, at least until at least one primary embryo reaches the globular developmental stage. In a second step, one or more primary embryos from the first step are cultured under conditions conducive to regeneration of plantlets from the primary embryos. Also provided is a process] for inducing direct somatic embryogenesis and organogenesis in monocotyledonous plant cells and rapidly regenerating fertile monocotyledonous plants[. Globular-stage embryos obtained by this same method for direct somatic embryogenesis are cultured under conditions conducive to induction of organogenesis, or until adventitious shoots are detected. One or more of the new shoots are then cultured under conditions conducive to regeneration of plantlets. Also provided is a process]; and for inducing somatic embryogenesis in monocotyledonous callus cells, suspension cells, or microspore-derived embryos, and rapidly regenerating fertile monocotyledonous plants. [In a first step embryogenic monocotyledonous callus cells, suspension cells or microspore-derived embryos are

cultured in or on a culture medium comprising auxin, cytokinin, and polyamine in amounts effective to cause induction of embryo formation, the cytokinin being present in greater proportion than the auxin, at least until at least one embryo reaches the globular developmental stage. In a second step, one or more globular-stage embryos from the first step are cultured under conditions conducive to regeneration of plantlets from the globular-stage embryos.] Fertile monocotyledonous plants thereby produced [according to the processes of the invention] are also provided.